

Switching actuator, submodule N 513/21  
3x AC 230/400V, 20AX, C-load, load-check

SWG1 513-1AB21

## Product and functional description



The switching actuator sub-module N 513/21 is a DIN-rail mounted device in N-system dimensions. It can switch three groups of electrical consumers, independent of each other, via its three relay contact outputs, each with load current measurement and monitoring (load-check). The sub-module cannot be operated stand-alone or be directly connected to the bus. But it can be connected via a special 6-pole bridging connector either with a switching actuator main module N 513/11, N 512/11 or N 562/11 or with another sub-module N 513/21, N 512/21 or N 562/21, which is already connected to a main module (see figure 1). The sub-module electronics are supplied by bus voltage via the 6-pole bridging connector.

In total up to 4 switching actuator submodules can be connected in series to a switching actuator main module, so that a main module, if need be, can be extended simply from a 3-fold to a 6-, 9-, 12- or 15-fold switching actuator and thus be matched flexibly to the number of loads to be switched.

It is indicated by flashing of the corresponding green LED A to E on the top of the main module if more submodules are set than are actually connected or if the set submodule type does not correspond with the submodule type actually connected or if a submodule is detected as faulty.

## Behavior in case of mains failure / recovery

Because the electronics of a submodule are fed from the bus (via the 6-pole interface to the main module), a mains failure then leads solely to a failure of the submodule if the bus voltage also fails as the result of a mains failure. However, it can be set for each submodule output individually which switching state it is to assume on a bus voltage failure and after the bus voltage recovery: as before bus voltage failure, ON or OFF.

## Application program

The switching actuator main module N 513/11, N 512/11 or N 562/11 needs the application program "07B0 A15 Switching Actuator 982002". This controls the outputs of the main module as well as the outputs of all connected sub-modules via their 6-pole interfaces.

In bus mode, a communication object can be available for each actuator output - for switching, for manual override, for a forced control, for a logical combination and for status query. Furthermore, if required, time-limited switching instead of permanent switching on can be enabled for each channel via an optional "Night mode" object (e.g. for lighting while cleaning), if need be with a warning before switching off by multiple switching the output on and off (flashing). It can also be selected whether all a module's outputs are to be set jointly and thus identically or whether each output is to be set separately and individually.

Amongst others, the application program includes optional detection and monitoring of the load current for each output on load failure and/or overload, simultaneous switching of all 3 outputs (3-phase switching), conversion of a speed given as a percentage value into 1- to 3-stage switching commands (fan speed control), conversion of a valve setting given as a percentage value into a pulse width modulated (PWM) switching command (thermal drive control), a switching cycle and operating hours count with threshold monitoring for each output and an integrated 8-bit scene control, in which each output can be incorporated into up to 8 scenes.

To load the application program, the Engineering Tool Software (ETS) is required as version 3.0 f or higher.

Connection example

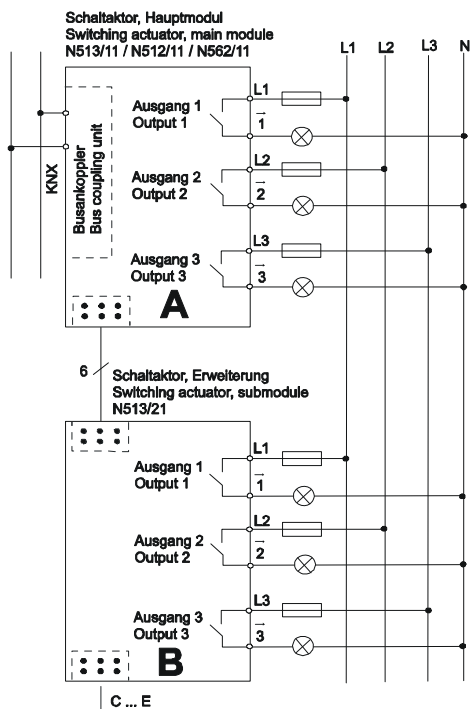


Figure 1. Connection example

Installation notes

- The device can be used for permanent installation in dry interior rooms and for insertion in distribution boards or miniature housings.



**DANGER**

- The device must be mounted and commissioned by an authorised electrician.
- When connecting the device, it should be ensured that the device can be isolated.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- With the last submodule no bridging connector must be plugged into the jack for a further submodule on the right submodule side.

Technical data

Power supply

- Bus voltage: via the 6-pole bridging connector
- Bus current per submodule: typically 1 mA
- Power dissipation: if all outputs = OFF: 0.03 W, at max. load and all outputs = ON: approx. 3.5 W

Outputs

- 3 switching outputs, potential-free relay contacts:
  - rated voltage: AC 230/400 V, 50/60 Hz
  - rated current: 20 AX (200 µF) to DIN EN 60669-1, 20 A in AC1 mode (cos φ = 0.8) and 16A in AC3 mode (cos φ = 0.45) as to DIN EN 60947-4-1,
  - DC switching capacity: 20A at 24V DC
  - Min. switching capacity: 100 mA at 12V AC
  - Incandescent lamp load: max. 3,680 W
  - LV halogen lamps, inductive transformer: 2,000 W
  - LV halogen lamps, electronic transformer: 2,500 W
  - Number of OSRAM ballasts for T5/T8:
    - QTI 1x28/54W: 56, QTP 1x36W: 31,
    - QT-M 1x26-42W:21, QTP 2x58W: 9,
    - QT-FQ 1x80W: 9
  - Mech. lifetime: > 1,000,000 switching cycles
  - Electr. lifetime: > 100,000 at AC1, > 30,000 at AC3
  - Load current measuring range: 0.1...20,5 A, sinusoidal
  - Load current frequency range: 50/60 Hz, +/- 5 Hz,
  - Measuring accuracy: +/- 9 % of the current measured value and +/- 130 mA,
  - Max. relay position changes per output and evenly distributed per minute with simultaneous switching of all relays: 20 with 3 outputs, 10 with 6 outputs, 7 with 9 outputs, 5 with 12 outputs, 4 with 15 outputs

Operating elements

- none

Display elements

- none

Connections

- Output circuits: screw-type terminals, insulation strip length 7... 9 mm. The following conductor cross-sections are permitted:
  - 0.5... 4.0 mm<sup>2</sup> single-core,
  - 0.5... 2.5 mm<sup>2</sup> finely stranded without / with connector sleeve.
 Maximum torque for terminals: 0.5 Nm
- Submodule: 6-pole jack for bridging connector.

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#### Mechanical data

- Housing: plastic
- Dimensions: DIN rail mounted device in N dimensions, width 3 module units (1 module unit = 18 mm)
- Weight: approx. 225 g (inclusive of bridging connector)
- Fire load: approx. 2800 kJ
- Installation: Snap-on mounting on DIN rail  
EN 60715-TH35-7.50

#### Electrical safety

- Degree of pollution (according to IEC 60664-1): 2
- Type of protection (according to EN 60529): IP 20
- Overvoltage category (according to IEC 60664-1): III
- Device complies with: EN 50090-2-2 and EN 60669-2-1

#### EMC requirements

- Complies with EN 50090-2-2, EN 50428 and EN 60669-2-1

#### Environmental conditions

- Climatic withstand capability: EN 50090-2-2
- Ambient operating temperature: - 5 ... + 45 °C
- Storage temperature: - 25 ... + 70 °C
- Relative humidity (not condensing): 5 % to 93 %

#### Markings

- none (no device with bus interface)

#### CE mark

- In accordance with the EMC guideline (residential and functional buildings), low voltage guideline

#### Location and function of connectors

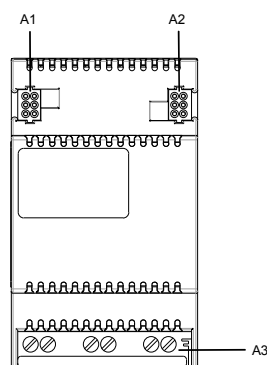


Figure 2. Connectors

- A1 Jack for connection of a switching actuator submodule to a switching actuator main module or to a preceding submodule
- A2 Jack for connection of a further switching actuator submodule
- A3 Screw-type terminals of outputs 1...3

#### Installation and wiring

##### Mounting / dismantling the device:

see figure 3 and 4

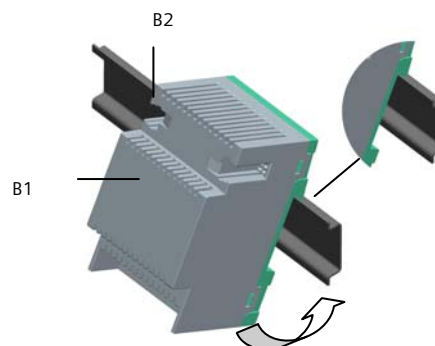


Figure 3. Mounting the device

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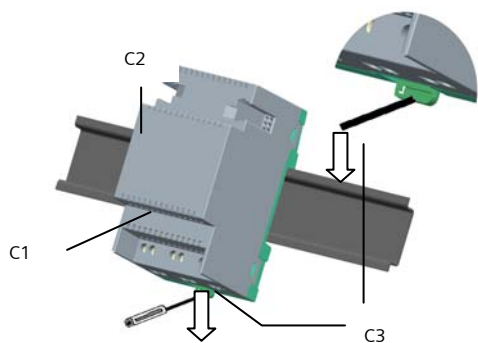


Figure 4. Dismounting the device

Connecting a switching actuator submodule: see figure 5  
Snap the switching actuator submodule on to the rail and push it to the left against the switching actuator main module or against the switching actuator submodule. Connect both devices using the bridging connector supplied.

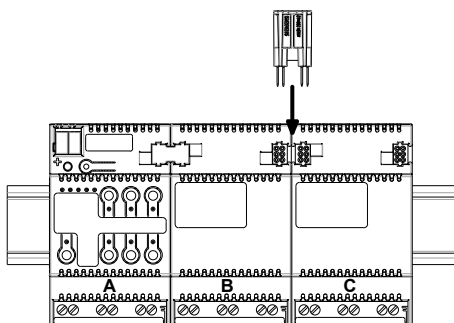
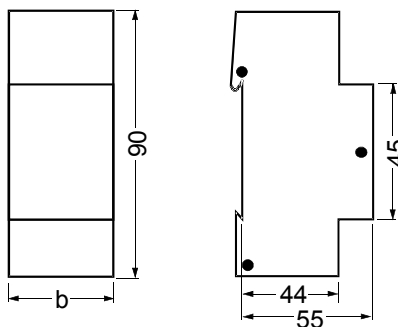


Figure 5. Connecting a switching actuator submodule

**Dimension drawing**

Dimensions in mm.



b = 3 module units

1 module unit (MU) = 18 mm

**General notes**

- The operating instructions must be handed over to the client.
- A faulty device shall be sent with a Return Good Note for Service provided by the appropriate Siemens sales office to the following address:  
SIEMENS AG, Siemensstr. 10, D-93055 Regensburg
- If you have further questions concerning the product please contact our technical support.

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www.siemens.de/automation/support-request